Appendix I
Storm Water Analysis

Date	Description	Pages
May 17, 2004	Storm Water Analysis	20

URS

Technical Memorandum

Date: May 18, 2004

To: 11400 South EIS – Project File

From: Autumn Hu

Subject: **Storm Water Runoff Flow Analysis**

The storm water runoff impacts of Alternatives 1, 3A, 4, and 7 of the EIS were compared to the existing condition. Each Alternative includes possible road improvements to different combination of the following road segments:

- 10600/10400 South
- 11400 South
- 12300/12600 South
- Jordan Gateway/Lone Peak Parkway
- State Street

The receiving water bodies potentially affected by storm water runoff for Alternatives 1, 3A, 4 and 7 include:

- South Jordan Canal
- Midas Creek
- Jordan River
- Willow Creek

The proposed and existing drainage systems in the study area are shown in the attached figure. The figure includes direction of flow, discharge locations, receiving water bodies, and detention ponds. Storm water flow due to additional surface area proposed by the 4 alternatives were calculated using the rational method and information listed below.

$$Q = C*I(t)*A \text{ , where}$$

Q= flow rate, $feet^3$/second

C=coefficient for surface condition, unitless
=> used 0.85

I =rainfall intensity, inches/hour
=> Rainfall data for the 2-year, 10-year, and 100-year storm event from the South Jordan Master Plan, May 2002 were used and are shown in Table 1. Intensity as a function of time data were fitted to a power equation and used in the flow calculation (as shown in the attached spreadsheets).

=> The time duration used to determine intensity is based on the maximum length of the road segment to the stormwater outfall. Duration is assumed to be 10 minute for the first 100 feet and 30 seconds per every 100 feet thereafter, as shown in the equation below.

$$t = 10 \text{ min} + 0.5 \text{ min} * [(\text{Length, ft} - 100 \text{ ft}) / 100 \text{ ft}]$$

A=surface area, acres

=>Road surface areas for the existing conditions and various alternatives were calculated using the project design files.

The flow rates were calculated for various road segments. The impacts of each alternative at various discharge locations were determined by summing a combination of flow rates from the applicable road segments. The increases (over existing) in storm water runoff for a 2-year and 10-year storm are summarized in Table 2 as the Undetained Flow Summary. The Detained Flow Summary in Table 2 includes the impact to flow of the various detention ponds (where applicable). In some locations the detention ponds decrease the flow to the receiving water. However, in other locations, due to the fact that the pond is also utilized to detain flow from offsite sources that are much greater than that contributed by this project, the flow to the receiving water is actually greater than what is shown for the Undetained Flow Summary. The spreadsheets used to calculate the values shown in Table 2 are attached.

Table 1 - Intensity Duration Information

(South Jordan Master Plan, May 2002)

Seconds	(t) Minutes	(i) 2 year in/hr	(i) 10 year in/hr	(i) 100 year in/hr
300	5	1.992	3.504	5.256
900	15	1.192	2.144	3.556
1800	30	0.812	1.422	2.436
2700	45	0.601	1.045	1.78
3600	60	0.509	0.874	1.424
7200	120	0.325	0.55	0.845
10800	180	0.245	0.41	0.599
21600	360	0.146	0.231	0.317
43200	720	0.088	0.139	0.19
86400	1440	0.049	0.079	0.109

Table 2 - Flow Increase Summary

Undetained Flow Summary							
Outfall	SJC	JR1	JR2	JR3	MC	WC1	WC2
2-Year Storm, flow (cfs)							
Alternative 1	7.61	2.62	8.82	17.50	4.91	9.28	4.62
Alternative 3A	7.61	3.83	-	17.50	-	8.32	4.66
Alternative 4	2.91	3.56	8.82	-	4.91	6.92	-
Alternative 7	2.91	3.83	8.82	-	4.91	9.43	3.46
10-year Storm, flow (cfs)							
Alternative 1	12.97	4.47	15.41	29.99	8.42	16.04	7.96
Alternative 3A	12.97	6.60	-	29.99	-	14.46	8.07
Alternative 4	16.04	6.08	15.41	-	8.42	12.01	-
Alternative 7	5.11	6.60	15.41	-	8.42	16.45	5.96
Detained Flow Summary							
Outfall	SJC	JR1	JR2	JR3	MC	WC1	WC2
2-Year Storm, flow (cfs)							
Alternative 1	1.00	28.00	2.00	17.50	6.71	40.00	4.62
Alternative 3A	1.00	29.21	-	17.50	-	40.00	4.66
Alternative 4	1.00	28.94	2.00	-	6.71	40.00	-
Alternative 7	1.00	29.21	2.00	-	6.71	40.00	3.46
10-year Storm, flow (cfs)							
Alternative 1	1.00	28.00	2.00	29.99	8.03	40.00	7.96
Alternative 3A	1.00	30.13	-	29.99	-	40.00	8.07
Alternative 4	1.00	29.62	2.00	-	8.03	40.00	-
Alternative 7	1.00	30.13	2.00	-	8.03	40.00	5.96

MC = Midas Creek at 11500 South
WC1 = Willow Creek at 11400 South
WC2 = Willow Creek at 12600 South
JR1 = Jordan River at 10600 South
JR2 = Jordan River at 11400 South
JR3 = Jordan River at 12300/12600 South
SJC = South Jordan Canal at 1500 West

URS Corporation
756 East Winchester Street
Suite 400
Salt Lake City, UT 84107
Tel: 801.904.4000
Fax: 801.904.4100

Segment	Un-Detained Flow (cfs)		Detained Flow (cfs)						Type of Flow
	2 yr	10 yr	Pond (2yr)	Pond (10yr)	Direct (2yr)	Direct (10yr)	Total 2yr	Total 10yr	
South Jordan Canal (SJCa)	7.61	12.97	1	1	-	-	1.0	1.0	Pond
[illegible]	2.91	5.11	1	1	-	-	1.0	1.0	Pond
Jordan River at 10600 South (JR1a)	2.62	4.47	28	42	-	-	28.0	28.0	Pond
Jordan River at 10600 South (JR1b)	3.83	6.60	28	42	1.21	2.13	29.2	30.1	Pond and direct dischage from East
Jordan River at 10600 South (JR1c)	3.56	6.08	28	42	0.94	1.62	28.9	29.6	Pond and direct dischage from East
Jordan River at 11400 South (JR2)	8.82	15.41	2	2	-	-	2.0	2.0	Two Ponds
[illegible]	17.50	29.99	13.91	23.76	3.59	6.23	17.5	30.0	Pond (flow shown is only from our project as the flow released from the pond is actually greater than what our project contributes) from East Discharge through Oil Water Separator from West
Midas Creek Total (MCT)	4.91	8.42	5	5	1.71	3.03	6.7	8.0	Ponds & 1 Area of Direct Discharge
Willow Creek at 11400 South (WC1a)	9.28	16.04	40	40	-	-	40.0	40.0	Pond
[illegible]	8.32	14.46	40	40	-	-	40.0	40.0	Pond
[illegible]	6.92	12.01	40	40	-	-	40.0	40.0	Pond
[illegible]	9.43	16.45	40	40	-	-	40.0	40.0	Pond
Willow Creek at 12300 South (WC2a)	4.62	7.96	3.41	5.86	1.21	2.10	4.6	8.0	Pond (flow shown is only from our project as the flow released from the pond is actually greater than what our project contributes) & Direct Discharge fr. East
[illegible]	4.66	8.07	-	-	4.66	8.07	4.7	8.1	Direct Discharge fr. East
[illegible]	3.46	5.96	-	-	3.46	5.96	3.5	6.0	Direct Discharge fr. East

Break-down of Flows for Each Alternative at Each Outfall

Undetained Flow Summary for Each Alternative for the 2 Year Flow (cfs)							
	SJC	JR1	JR2	JR3	MC	WC1	WC2
Alternative 1	7.61	2.62	8.82	[illegible]	4.91	9.28	4.62
Alternative 3A	7.61	3.83	-	[illegible]	-	[illegible]	[illegible]
Alternative 4	[illegible]	3.56	8.82	-	4.91	[illegible]	-
Alternative 7	[illegible]	3.83	8.82	-	4.91	[illegible]	[illegible]

Undetained Flow Summary for Each Alternative for the 10 Year Flow (cfs)							
	SJC	JR1	JR2	JR3	MC	WC1	WC2
Alternative 1	12.97	4.47	15.41	[illegible]	8.42	16.04	7.96
Alternative 3A	12.97	6.60	-	[illegible]	-	[illegible]	[illegible]
Alternative 4	[illegible]	6.08	15.41	-	8.42	[illegible]	-
Alternative 7	[illegible]	6.60	15.41	-	8.42	[illegible]	[illegible]

Detained Flow Summary for Each Alternative for the 2 Year Flow (cfs)							
	SJC	JR1	JR2	JR3	MC	WC1	WC2
Alternative 1	1.00	28.00	2.00	[illegible]	6.71	40.00	4.62
Alternative 3A	1.00	29.21	-	[illegible]	-	[illegible]	[illegible]
Alternative 4	[illegible]	28.94	2.00	-	6.71	[illegible]	-
Alternative 7	[illegible]	29.21	2.00	-	6.71	[illegible]	[illegible]

Detained Flow Summary for Each Alternative for the 10 Year Flow (cfs)							
	SJC	JR1	JR2	JR3	MC	WC1	WC2
Alternative 1	1.00	28.00	2.00	[illegible]	8.03	40.00	7.96
Alternative 3A	1.00	30.13	-	[illegible]	-	[illegible]	[illegible]
Alternative 4	[illegible]	29.62	2.00	-	8.03	[illegible]	-
Alternative 7	[illegible]	30.13	2.00	-	8.03	[illegible]	[illegible]

EXISTING AND PROPOSED AREAS BY ROADWAY SECTION FOR ALTERNATIVES

Outfall Code	Corridor	Section	Existing				All Alternatives	
			Length	X-Width	sq.ft.	acres	Max Additional Length	Max Additional Area
							ft	acres
SJC	10400/10600 S	10400 S: Bangerter Hwy. To Redwood Rd.	10640	50	532,000	12.21	10,640	19.54
SJC	10400/10600 S	10400 S: W. End of Proposed Design to Redwood Rd.	1823	50	91,150	2.09	1,824	3.35
JR1	10400/10600 S	10400/10600 S: Redwood Rd. to E. End of Proposed Design	10434	106	1,106,004	25.39	2,683 7,757	6.66
JR1	Jordan Gateway / Lone Peak Pkwy	Jordan Gateway: 10600 S. to 10800 S	1,188.00	85	100,980	2.32	1,188	1.23
JR1	Other	10600 S: Spui (include bridge here and not in I15)	used	shape	**1,120,138**	**25.71**	-	0.00
JR1	Other	I15 Roadway from ramp gores at 11400 S. North to end of Des	2526	160	404,160	9.28	2,526	1.86
JR2	11400 S	**(NEW-Narrow)** 11400 S: Across Jordan River 1200 W to 700 W	350	28	9,800	0.22	5,216	11.51
JR3	12300/12600 S	12300/12600 S: 2700 to SJC WEST	6200	80	496,000	11.39	6,200	7.12
JR3	12300/12600 S	12300/12600 S: SJC to 1300 WEST	1800	80	144,000	3.31	1,800	2.07
JR3	12300/12600 S	12300/12600 S: 1300 to JR WEST	**2200**	**60**	132,000	3.03	2,200	3.54
JR3	12300/12600 S	12600 S: Bangerter Hwy. To 2700 WEST	7300	60	438,000	10.06	7,300	11.73
JR3	12300/12600 S	12300/12600 S: JR to RR EAST	**5100**	**60**	306,000	7.02	5,100	8.20
JR3	12300/12600 S	12300/12600 S: RR to Willow Creek EAST	**750**	**90**	67,500	1.55	750	0.69
MC	11400 S	**(NEW-Narrow)** 11400 S: 2700 W. to 1200 W.	7950	39.07	310,607	7.13	7,950	10.76
WC1	Other	11000 S Underpass	1160	59.75	69,310	1.59	2,468	2.79
WC1	Other	I15 Interchg at 11400 S. fr Ramp Gores on N to S end of Design. Also include 11400 S from State St. to Jordan Gateway	**used**	**shapes**	155,482	3.57	-	5.58
WC1	11400 S	**(NEW-Narrow_Shorter)** 11400 S: Jordan Gateway to 600 W.	used	shape	87,319	2.00	3,254	5.32
WC1	Other	11800 S Overpass	na	na	0	0.00	1,622	2.49
WC1	State Street	State St: 11800 S. to 11400 S.	**used**	**shapes**	295,628	6.79	-	5.91
WC1	Jordan Gateway / Lone Peak Pkwy	Jordan Gateway: 11400 S. north to 11000 S.	used	shape	223,107	5.12	2,673	2.86
WC1	Jordan Gateway / Lone Peak Pkwy	Lone Peak Parkway: 11800 S. to 11400 S.	used	shape	140,028	3.21	2,626	4.62
WC2	State Street	State St: 11800 S. to 12300 S.	**used**	**shape**	199,305	4.58	3,953	7.22
WC2	Jordan Gateway / Lone Peak Pkwy	Lone Peak Parkway: 11800 S. to 12300 S.	used	shape	209,121	4.80	3,754	6.40
WC2	12300/12600 S	12300 S: I15 to Willow Creek Crossing	used	shape	336,325	7.72	-	1.59
Wetland	Jordan Gateway / Lone Peak Pkwy	Jordan Gateway: 10800 S. to 11000 S.	used	shape	226,969	5.21	2,626	2.63
		TOTAL				163.22		
		Percentage Increase in Area						

Notes:
SJC - South Jordan Canal
MC - Midas Creek
JR - Jordan River
WC - Willow Creek
USLC - Utah and Salt Lake Canal

EXISTING AND PROPOSED AREAS BY ROADWAY SECTION FOR ALTERNATIVES

Outfall Code	Corridor	Section	Alternative 1					
			Existing	Proposed				Additional
			(acres)	Length (ft)	X-Width (ft)	sq.ft.	(acres)	(acres)
SJC	10400/10600 S	10400 S: Bangerter Hwy. To Redwood Rd.	12.21	10640	130	1,383,200	31.75	19.54
SJC	10400/10600 S	10400 S: W. End of Proposed Design to Redwood Rd.	-		-	-	-	-
JR1	10400/10600 S	10400/10600 S: Redwood Rd. to E. End of Proposed Design	25.39	2683 7757	130 135	1,395,985	32.05	6.66
JR1	Jordan Gateway / Lone Peak Pkwy	Jordan Gateway: 10600 S. to 10800 S	-	-	-	-	-	-
JR1	Other	10600 S: Spui (include bridge here and not in I15)	-	-	-	-	-	-
JR1	Other	I15 Roadway from ramp gores at 11400 S. North to end of Des	-	-	-	-	-	-
JR2	11400 S	**(NEW-Narrow)** 11400 S: Across Jordan River 1200 W to 700 W	0.22	5216	98	511,168	11.73	11.51
JR3	12300/12600 S	12300/12600 S: 2700 to SJC WEST	11.39	6200	130	806,000	18.50	7.12
JR3	12300/12600 S	12300/12600 S: SJC to 1300 WEST	3.31	1800	130	234,000	5.37	2.07
JR3	12300/12600 S	12300/12600 S: 1300 to JR WEST	3.03	**2200**	**130**	286,000	6.57	3.54
JR3	12300/12600 S	12600 S: Bangerter Hwy. To 2700 WEST	10.06	7300	130	949,000	21.79	11.73
JR3	12300/12600 S	12300/12600 S: JR to RR EAST	7.02	**5100**	**130**	663,000	15.22	8.20
JR3	12300/12600 S	12300/12600 S: RR to Willow Creek EAST	1.55	**750**	**130**	97,500	2.24	0.69
MC	11400 S	**(NEW-Narrow)** 11400 S: 2700 W. to 1200 W.	7.13	7950	98	779,100	17.89	10.76
WC1	Other	11000 S Underpass	1.59	2468	77.31	190,801	4.38	2.79
WC1	Other	I15 Interchg at 11400 S. fr Ramp Gores on N to S end of Design. Also include 11400 S from State St. to Jordan Gateway	-	-	-	-	-	-
WC1	11400 S	**(NEW-Narrow_Shorter)** 11400 S: Jordan Gateway to 600 W.	2.00	3254	98	318,892	7.32	5.32
WC1	Other	11800 S Overpass	0.00	1622	67	108,674	2.49	2.49
WC1	State Street	State St: 11800 S. to 11400 S.	6.79	**used**	**shape**	553,105	12.70	5.91
WC1	Jordan Gateway / Lone Peak Pkwy	Jordan Gateway: 11400 S. north to 11000 S.	-	-	-	-	-	-
WC1	Jordan Gateway / Lone Peak Pkwy	Lone Peak Parkway: 11800 S. to 11400 S.	-	-	-	-	-	-
WC2	State Street	State St: 11800 S. to 12300 S.	4.58	**3953**	**130**	513,890	11.80	7.22
WC2	Jordan Gateway / Lone Peak Pkwy	Lone Peak Parkway: 11800 S. to 12300 S.	-	-	-	-	-	-
WC2	12300/12600 S	12300 S: I15 to Willow Creek Crossing	7.72	used	shape	405,770	9.32	1.59
Wetland	Jordan Gateway / Lone Peak Pkwy	Jordan Gateway: 10800 S. to 11000 S.	-	-	-	-	-	-
		TOTAL	103.99				211.11	**107.12**
		Percentage Increase in Area						**103.0%**

Notes:
SJC - South Jordan Canal
MC - Midas Creek
JR - Jordan River
WC - Willow Creek
USLC - Utah and Salt Lake Canal

EXISTING AND PROPOSED AREAS BY ROADWAY SECTION FOR ALTERNATIVES

Outfall Code	Corridor	Section	Alternative 3A					
			Existing	Proposed				Additional
			(acres)	Length (ft)	X-Width (ft)	sq.ft.	(acres)	(acres)
SJC	10400/10600 S	10400 S: Bangerter Hwy. To Redwood Rd.	12.21	10640	130	1,383,200	31.75	19.54
SJC	10400/10600 S	10400 S: W. End of Proposed Design to Redwood Rd.	-	-	-	-	-	-
JR1	10400/10600 S	10400/10600 S: Redwood Rd. to E. End of Proposed Design	25.39	2683 7757	130 135	1,395,985	32.05	6.66
JR1	Jordan Gateway / Lone Peak Pkwy	Jordan Gateway: 10600 S. to 10800 S	2.32	1188	130	154,440	3.55	1.23
JR1	Other	10600 S: Spui (include bridge here and not in I15)	25.71	used	shape	1,116,478	25.63	**-0.08**
JR1	Other	I15 Roadway from ramp gores at 11400 S. North to end of Des	-	-	-	-	-	-
JR2	11400 S	**(NEW-Narrow)** 11400 S: Across Jordan River 1200 W to 700 W	-	-	-	-	-	-
JR3	12300/12600 S	12300/12600 S: 2700 to SJC WEST	11.39	6200	130	806,000	18.50	7.12
JR3	12300/12600 S	12300/12600 S: SJC to 1300 WEST	3.31	1800	130	234,000	5.37	2.07
JR3	12300/12600 S	12300/12600 S: 1300 to JR WEST	3.03	2200	130	286,000	6.57	3.54
JR3	12300/12600 S	12600 S: Bangerter Hwy. To 2700 WEST	10.06	7300	130	949,000	21.79	11.73
JR3	12300/12600 S	12300/12600 S: JR to RR EAST	7.02	5100	130	663,000	15.22	8.20
JR3	12300/12600 S	12300/12600 S: RR to Willow Creek EAST	1.55	750	130	97,500	2.24	0.69
MC	11400 S	**(NEW-Narrow)** 11400 S: 2700 W. to 1200 W.	-			-	-	-
WC1	Other	11000 S Underpass	1.59	2468	77.31	190,801	4.38	2.79
WC1	Other	I15 Interchg at 11400 S. fr Ramp Gores on N to S end of Design. Also include 11400 S from State St. to Jordan Gateway	-	-	-	-	-	-
WC1	11400 S	**(NEW-Narrow_Shorter)** 11400 S: Jordan Gateway to 600 W.	-	-	-	-	-	-
WC1	Other	11800 S Overpass	0.00	1622	67	108,674	2.49	2.49
WC1	State Street	State St: 11800 S. to 11400 S.	-	-	-	-	-	-
WC1	Jordan Gateway / Lone Peak Pkwy	Jordan Gateway: 11400 S. north to 11000 S.	5.12	2673	130	347,490	7.98	2.86
WC1	Jordan Gateway / Lone Peak Pkwy	Lone Peak Parkway: 11800 S. to 11400 S.	3.21	2626	130	341,380	7.84	4.62
WC2	State Street	State St: 11800 S. to 12300 S.	-	-	-	-	-	-
WC2	Jordan Gateway / Lone Peak Pkwy	Lone Peak Parkway: 11800 S. to 12300 S.	4.80	3754	130	488,020	11.20	6.40
WC2	12300/12600 S	12300 S: I15 to Willow Creek Crossing	7.72	-	-	405,770	9.32	1.59
Wetland	Jordan Gateway / Lone Peak Pkwy	Jordan Gateway: 10800 S. to 11000 S.	5.21	2626	130	341,380	7.84	2.63
		TOTAL	129.65				213.71	**81.43**
		Percentage Increase in Area						**62.8%**

Notes:
SJC - South Jordan Canal
MC - Midas Creek
JR - Jordan River
WC - Willow Creek
USLC - Utah and Salt Lake Canal

EXISTING AND PROPOSED AREAS BY ROADWAY SECTION FOR ALTERNATIVES

Outfall Code	Corridor	Section	Alternative 4					
			Existing	Proposed				Additional
			(acres)	Length (ft)	X-Width (ft)	sq.ft.	(acres)	(acres)
SJC	10400/10600 S	10400 S: Bangerter Hwy. To Redwood Rd.	-	-	-	-	-	-
SJC	10400/10600 S	10400 S: W. End of Proposed Design to Redwood Rd.	2.09	1824	130	237,120	5.44	3.35
JR1	10400/10600 S	10400/10600 S: Redwood Rd. to E. End of Proposed Design	25.39	2683	130	1,395,985	32.05	6.66
JR1	Jordan Gateway / Lone Peak Pkwy	Jordan Gateway: 10600 S. to 10800 S	-	-	-	-	-	-
JR1	Other	10600 S: Spui (include bridge here and not in I15)	25.71	used	shape	1,116,478	25.63	-0.08
JR1	Other	I15 Roadway from ramp gores at 11400 S. North to end of Des	9.28	2526	192	484,992	11.13	1.86
JR2	11400 S	**(NEW-Narrow)** 11400 S: Across Jordan River 1200 W to 700 W	0.22	-	-	511,168	11.73	11.51
JR3	12300/12600 S	12300/12600 S: 2700 to SJC WEST	-	-	-	-	-	-
JR3	12300/12600 S	12300/12600 S: SJC to 1300 WEST	-	-	-	-	-	-
JR3	12300/12600 S	12300/12600 S: 1300 to JR WEST	-	-	-	-	-	-
JR3	12300/12600 S	12600 S: Bangerter Hwy. To 2700 WEST	-	-	-	-	-	-
JR3	12300/12600 S	12300/12600 S: JR to RR EAST	-	-	-	-	-	-
JR3	12300/12600 S	12300/12600 S: RR to Willow Creek EAST	-	-	-	-	-	-
MC	11400 S	**(NEW-Narrow)** 11400 S: 2700 W. to 1200 W.	7.13	7950	98	779,100	17.89	10.76
WC1	Other	11000 S Underpass	-			-	-	-
WC1	Other	I15 Interchg at 11400 S. fr Ramp Gores on N to S end of Design. Also include 11400 S from State St. to Jordan Gateway	3.57	Used	Shapes	398,344	9.14	5.58
WC1	11400 S	**(NEW-Narrow_Shorter)** 11400 S: Jordan Gateway to 600 W.	2.00	3254	98	318,892	7.32	5.32
WC1	Other	11800 S Overpass	-	-	-	-	-	-
WC1	State Street	State St: 11800 S. to 11400 S.	-	-	-	-	-	-
WC1	Jordan Gateway / Lone Peak Pkwy	Jordan Gateway: 11400 S. north to 11000 S.	-	-	-	-	-	-
WC1	Jordan Gateway / Lone Peak Pkwy	Lone Peak Parkway: 11800 S. to 11400 S.	-	-	-	-	-	-
WC2	State Street	State St: 11800 S. to 12300 S.	-	-	-	-	-	-
WC2	Jordan Gateway / Lone Peak Pkwy	Lone Peak Parkway: 11800 S. to 12300 S.	-	-	-	-	-	-
WC2	12300/12600 S	12300 S: I15 to Willow Creek Crossing	-	-	-	-	-	-
Wetland	Jordan Gateway / Lone Peak Pkwy	Jordan Gateway: 10800 S. to 11000 S.	-	-	-	-	-	-
		TOTAL	75.41				120.34	**44.94**
		Percentage Increase in Area						**59.6%**

Notes:
SJC - South Jordan Canal
MC - Midas Creek
JR - Jordan River
WC - Willow Creek
USLC - Utah and Salt Lake Canal

EXISTING AND PROPOSED AREAS BY ROADWAY SECTION FOR ALTERNATIVES

Outfall Code	Corridor	Section	Alternative 7					
			Existing	Proposed				Additional
			(acres)	Length (ft)	X-Width (ft)	sq.ft.	(acres)	(acres)
SJC	10400/10600 S	10400 S: Bangerter Hwy. To Redwood Rd.				-		
SJC	10400/10600 S	10400 S: W. End of Proposed Design to Redwood Rd.	2.09	1824	130	237,120	5.44	3.35
JR1	10400/10600 S	10400/10600 S: Redwood Rd. to E. End of Proposed Design	25.39	2683	130	1,395,985	32.05	6.66
JR1	Jordan Gateway / Lone Peak Pkwy	Jordan Gateway: 10600 S. to 10800 S	2.32	1188	130	154,440	3.55	1.23
JR1	Other	10600 S: Spui (include bridge here and not in I15)	25.71	used	shape	1,116,478	25.63	-0.08
JR1	Other	I15 Roadway from ramp gores at 11400 S. North to end of Des	-	-	-	-	-	-
JR2	11400 S	**(NEW-Narrow)** 11400 S: Across Jordan River 1200 W to 700 W	0.22	5216	98	511,168	11.73	11.51
JR3	12300/12600 S	12300/12600 S: 2700 to SJC WEST	-	-	-	-	-	-
JR3	12300/12600 S	12300/12600 S: SJC to 1300 WEST	-	-	-	-	-	-
JR3	12300/12600 S	12300/12600 S: 1300 to JR WEST	-	-	-	-	-	-
JR3	12300/12600 S	12600 S: Bangerter Hwy. To 2700 WEST	-	-	-	-	-	-
JR3	12300/12600 S	12300/12600 S: JR to RR EAST	-	-	-	-	-	-
JR3	12300/12600 S	12300/12600 S: RR to Willow Creek EAST	-	-	-	-	-	-
MC	11400 S	**(NEW-Narrow)** 11400 S: 2700 W. to 1200 W.	7.13	7950	98	779,100	17.89	10.76
WC1	Other	11000 S Underpass	-	-	-	-	-	-
WC1	Other	I15 Interchg at 11400 S. fr Ramp Gores on N to S end of Design. Also include 11400 S from State St. to Jordan Gateway	-	-	-	-	-	-
WC1	11400 S	**(NEW-Narrow_Shorter)** 11400 S: Jordan Gateway to 600 W.	2.00	3254	98	318,892	7.32	5.32
WC1	Other	11800 S Overpass	-	-	-	-	-	-
WC1	State Street	State St: 11800 S. to 11400 S.	-	-	-	-	-	-
WC1	Jordan Gateway / Lone Peak Pkwy	Jordan Gateway: 11400 S. north to 11000 S.	5.12	2673	130	347,490	7.98	2.86
WC1	Jordan Gateway / Lone Peak Pkwy	Lone Peak Parkway: 11800 S. to 11400 S.	3.21	2626	130	341,380	7.84	4.62
WC2	State Street	State St: 11800 S. to 12300 S.	-	-	-	-	-	-
WC2	Jordan Gateway / Lone Peak Pkwy	Lone Peak Parkway: 11800 S. to 12300 S.	4.80	3754	130	488,020	11.20	6.40
WC2	12300/12600 S	12300 S: I15 to Willow Creek Crossing	-	-	-	-	-	-
Wetland	Jordan Gateway / Lone Peak Pkwy	Jordan Gateway: 10800 S. to 11000 S.	5.21	2626	130	341,380	7.84	2.63
		TOTAL	83.22				138.46	**52.61**
		Percentage Increase in Area						**63.2%**

Notes:
SJC - South Jordan Canal
MC - Midas Creek
JR - Jordan River
WC - Willow Creek
USLC - Utah and Salt Lake Canal

DONE

10400 South / 106 South

Intensity Duration Information

(South Jordan Master Plan, May 2002)

Seconds	(t) Minutes	(i) 2 year In/hr	(i) 10 year In/hr	(i) 100 year in/hr
300	5	1.992	3.504	5.256
900	15	1.192	2.144	3.556
1800	30	0.812	1.422	2.436
2700	45	0.601	1.045	1.78
3600	60	0.509	0.874	1.424
7200	120	0.325	0.55	0.845
10800	180	0.245	0.41	0.599
21600	360	0.146	0.231	0.317
43200	720	0.088	0.139	0.19
86400	1440	0.049	0.079	0.109

Rational Method Data

"C" coeff.	0.85	See Graphs
Area of Infl.	6.66 Acres	
Length (ft)	10440 Feet	
Time of Conc.	61.7 Minutes	
Intensity 2yr	0.463 in/hr	$i = 7.0973\ t^{-0.6623}$
Intensity 10yr	0.789 in/hr	$i = 13.346\ t^{-0.686}$
Intensity 100 yr	1.223 in/hr	$i = 24.019\ t^{-0.7223}$
Add point flow	0 cfs	
Peak Flow 2 yr	**2.62 cfs**	
Peak Flow 10 yr	**4.47 cfs**	Q=C*I*A
Peak Flow 100 yr	**6.92 cfs**	

10600 South Spui

Intensity Duration Information

(South Jordan Master Plan, May 2002)

Seconds	(t) Minutes	(i) 2 year In/hr	(i) 10 year In/hr	(i) 100 year in/hr
300	5	1.992	3.504	5.256
900	15	1.192	2.144	3.556
1800	30	0.812	1.422	2.436
2700	45	0.601	1.045	1.78
3600	60	0.509	0.874	1.424
7200	120	0.325	0.55	0.845
10800	180	0.245	0.41	0.599
21600	360	0.146	0.231	0.317
43200	720	0.088	0.139	0.19
86400	1440	0.049	0.079	0.109

Rational Method Data

"C" coeff.	0.85	See Graphs
Area of Infl.	0.00 Acres	
Length (ft)	0 Feet	
Time of Conc.	9.5 Minutes	
Intensity 2yr	1.598 in/hr	$i = 7.0973\ t^{-0.6623}$
Intensity 10yr	2.849 in/hr	$i = 13.346\ t^{-0.686}$
Intensity 100 yr	4.724 in/hr	$i = 24.019\ t^{-0.7223}$
Add point flow	0 cfs	
Peak Flow 2 yr	**0.00 cfs**	
Peak Flow 10 yr	**0.00 cfs**	Q=C*I*A
Peak Flow 100 yr	**0.00 cfs**	

Jordan Gateway

Intensity Duration Information

(South Jordan Master Plan, May 2002)

Seconds	(t) Minutes	(i) 2 year In/hr	(i) 10 year In/hr	(i) 100 year in/hr
300	5	1.992	3.504	5.256
900	15	1.192	2.144	3.556
1800	30	0.812	1.422	2.436
2700	45	0.601	1.045	1.78
3600	60	0.509	0.874	1.424
7200	120	0.325	0.55	0.845
10800	180	0.245	0.41	0.599
21600	360	0.146	0.231	0.317
43200	720	0.088	0.139	0.19
86400	1440	0.049	0.079	0.109

Rational Method Data

"C" coeff.	0.85	See Graphs
Area of Infl.	1.23 Acres	
Length (ft)	1,188.00 Feet	
Time of Conc.	15.44 Minutes	
Intensity 2yr	1.158 in/hr	$i = 7.0973\ t^{-0.6623}$
Intensity 10yr	2.041 in/hr	$i = 13.346\ t^{-0.686}$
Intensity 100 yr	3.327 in/hr	$i = 24.019\ t^{-0.7223}$
Add point flow	0 cfs	
Peak Flow 2 yr	**1.21 cfs**	
Peak Flow 10 yr	**2.13 cfs**	Q=C*I*A
Peak Flow 100 yr	**3.47 cfs**	

I15

Intensity Duration Information

(South Jordan Master Plan, May 2002)

Seconds	(t) Minutes	(i) 2 year In/hr	(i) 10 year In/hr	(i) 100 year in/hr
300	5	1.992	3.504	5.256
900	15	1.192	2.144	3.556
1800	30	0.812	1.422	2.436
2700	45	0.601	1.045	1.78
3600	60	0.509	0.874	1.424
7200	120	0.325	0.55	0.845
10800	180	0.245	0.41	0.599
21600	360	0.146	0.231	0.317
43200	720	0.088	0.139	0.19
86400	1440	0.049	0.079	0.109

Rational Method Data

"C" coeff.	0.85	See Graphs
Area of Infl.	1.86 Acres	
Length (ft)	6526 Feet	
Time of Conc.	42.13 Minutes	
Intensity 2yr	0.596 in/hr	$i = 7.0973\ t^{-0.6623}$
Intensity 10yr	1.025 in/hr	$i = 13.346\ t^{-0.686}$
Intensity 100 yr	1.611 in/hr	$i = 24.019\ t^{-0.7223}$
Add point flow	0 cfs	
Peak Flow 2 yr	**0.94 cfs**	
Peak Flow 10 yr	**1.62 cfs**	Q=C*I*A
Peak Flow 100 yr	**2.54 cfs**	

FLOW (cfs)	2yr	10yr
JR1a = 104/106	2.62	4.47
JR1b = 104/106, Jordan Gateway, & 106 SPUI	3.83	6.60
JR1c = 104/106, 106 SPUI, & I15	3.56	6.08

DONE

11400 South from West

Intensity Duration Information

(South Jordan Master Plan, May 2002)

Seconds	(t) Minutes	(i) 2 year In/hr	(i) 10 year In/hr	(i) 100 year in/hr
300	5	1.992	3.504	5.256
900	15	1.192	2.144	3.556
1800	30	0.812	1.422	2.436
2700	45	0.601	1.045	1.78
3600	60	0.509	0.874	1.424
7200	120	0.325	0.55	0.845
10800	180	0.245	0.41	0.599
21600	360	0.146	0.231	0.317
43200	720	0.088	0.139	0.19
86400	1440	0.049	0.079	0.109

Rational Method Data

"C" coeff.	0.85		See Graphs
Area of Infl.	5.75	Acres	
Length (ft)	2608	Feet	
Time of Conc.	22.54	Minutes	
Intensity 2yr	0.902	in/hr	$i = 7.0973\ t^{-0.6623}$
Intensity 10yr	1.575	in/hr	$i = 13.346\ t^{-0.686}$
Intensity 100 yr	2.531	in/hr	$i = 24.019\ t^{-0.7223}$
Add point flow	0	cfs	
Peak Flow 2 yr	**4.41**	**cfs**	
Peak Flow 10 yr	**7.70**	**cfs**	Q=C*I*A
Peak Flow 100 yr	**12.38**	**cfs**	

11400 South from East

Intensity Duration Information

(South Jordan Master Plan, May 2002)

Seconds	(t) Minutes	(i) 2 year In/hr	(i) 10 year In/hr	(i) 100 year in/hr
300	5	1.992	3.504	5.256
900	15	1.192	2.144	3.556
1800	30	0.812	1.422	2.436
2700	45	0.601	1.045	1.78
3600	60	0.509	0.874	1.424
7200	120	0.325	0.55	0.845
10800	180	0.245	0.41	0.599
21600	360	0.146	0.231	0.317
43200	720	0.088	0.139	0.19
86400	1440	0.049	0.079	0.109

Rational Method Data

"C" coeff.	0.85		See Graphs
Area of Infl.	5.75	Acres	
Length (ft)	2608	Feet	
Time of Conc.	22.54	Minutes	
Intensity 2yr	0.902	in/hr	$i = 7.0973\ t^{-0.6623}$
Intensity 10yr	1.575	in/hr	$i = 13.346\ t^{-0.686}$
Intensity 100 yr	2.531	in/hr	$i = 24.019\ t^{-0.7223}$
Add point flow	0	cfs	
Peak Flow 2 yr	**4.41**	**cfs**	
Peak Flow 10 yr	**7.70**	**cfs**	Q=C*I*A
Peak Flow 100 yr	**12.38**	**cfs**	

FLOW (cfs)	2yr	10yr
JR2 = East and West	8.82	15.41

DONE

Bangerter to South Jordan Canal (West)

Intensity Duration Information

(South Jordan Master Plan, May 2002)

Seconds	(t) Minutes	(i) 2 year In/hr	(i) 10 year In/hr	(i) 100 year in/hr
300	5	1.992	3.504	5.256
900	15	1.192	2.144	3.556
1800	30	0.812	1.422	2.436
2700	45	0.601	1.045	1.78
3600	60	0.509	0.874	1.424
7200	120	0.325	0.55	0.845
10800	180	0.245	0.41	0.599
21600	360	0.146	0.231	0.317
43200	720	0.088	0.139	0.19
86400	1440	0.049	0.079	0.109

Rational Method Data

"C" coeff.	0.85		See Graphs
Area of Infl.	25.96	Acres	
Length (ft)	13500	Feet	
Time of Conc.	77	Minutes	
Intensity 2yr	0.400	in/hr	$i = 7.0973\ t^{-0.6623}$
Intensity 10yr	0.678	in/hr	$i = 13.346\ t^{-0.686}$
Intensity 100 yr	1.042	in/hr	$i = 24.019\ t^{-0.7223}$
Add point flow	0	cfs	
Peak Flow 2 yr	**8.82**	**cfs**	
Peak Flow 10 yr	**14.96**	**cfs**	Q=C*I*A
Peak Flow 100 yr	**23.00**	**cfs**	

FLOW (cfs)	2yr	10yr
[redacted]		

Willow Creek Crossing to Jordan River (East)

Intensity Duration Information

(South Jordan Master Plan, May 2002)

Seconds	(t) Minutes	(i) 2 year In/hr	(i) 10 year In/hr	(i) 100 year in/hr
300	5	1.992	3.504	5.256
900	15	1.192	2.144	3.556
1800	30	0.812	1.422	2.436
2700	45	0.601	1.045	1.78
3600	60	0.509	0.874	1.424
7200	120	0.325	0.55	0.845
10800	180	0.245	0.41	0.599
21600	360	0.146	0.231	0.317
43200	720	0.088	0.139	0.19
86400	1440	0.049	0.079	0.109

Rational Method Data

"C" coeff.	0.85		See Graphs
Area of Infl.	8.88	Acres	
Length (ft)	5100	Feet	
Time of Conc.	35	Minutes	
Intensity 2yr	0.674	in/hr	$i = 7.0973\ t^{-0.6623}$
Intensity 10yr	1.164	in/hr	$i = 13.346\ t^{-0.686}$
Intensity 100 yr	1.842	in/hr	$i = 24.019\ t^{-0.7223}$
Add point flow	0	cfs	
Peak Flow 2 yr	**5.09**	**cfs**	
Peak Flow 10 yr	**8.79**	**cfs**	Q=C*I*A
Peak Flow 100 yr	**13.91**	**cfs**	

South Jordan Canal to Jordan River (Direct Discharge)

Intensity Duration Information

(South Jordan Master Plan, May 2002)

Seconds	(t) Minutes	(i) 2 year In/hr	(i) 10 year In/hr	(i) 100 year in/hr
300	5	1.992	3.504	5.256
900	15	1.192	2.144	3.556
1800	30	0.812	1.422	2.436
2700	45	0.601	1.045	1.78
3600	60	0.509	0.874	1.424
7200	120	0.325	0.55	0.845
10800	180	0.245	0.41	0.599
21600	360	0.146	0.231	0.317
43200	720	0.088	0.139	0.19
86400	1440	0.049	0.079	0.109

Rational Method Data

"C" coeff.	0.85		See Graphs
Area of Infl.	5.60	Acres	
Length (ft)	4000	Feet	
Time of Conc.	29.5	Minutes	
Intensity 2yr	0.754	in/hr	$i = 7.0973\ t^{-0.6623}$
Intensity 10yr	1.309	in/hr	$i = 13.346\ t^{-0.686}$
Intensity 100 yr	2.084	in/hr	$i = 24.019\ t^{-0.7223}$
Add point flow	0	cfs	
Peak Flow 2 yr	**3.59**	**cfs**	
Peak Flow 10 yr	**6.23**	**cfs**	Q=C*I*A
Peak Flow 100 yr	**9.92**	**cfs**	

DONE

11400 South (MCT)

Intensity Duration Information

(South Jordan Master Plan, May 2002)

Seconds	(t) Minutes	(i) 2 year In/hr	(i) 10 year In/hr	(i) 100 year in/hr
300	5	1.992	3.504	5.256
900	15	1.192	2.144	3.556
1800	30	0.812	1.422	2.436
2700	45	0.601	1.045	1.78
3600	60	0.509	0.874	1.424
7200	120	0.325	0.55	0.845
10800	180	0.245	0.41	0.599
21600	360	0.146	0.231	0.317
43200	720	0.088	0.139	0.19
86400	1440	0.049	0.079	0.109

Rational Method Data

"C" coeff.	0.85		See Graphs
Area of Infl.	10.76	Acres	
Length (ft)	7950	Feet	
Time of Conc.	49.25	Minutes	
Intensity 2yr	0.537	in/hr	$i = 7.0973\ t^{-0.6623}$
Intensity 10yr	0.921	in/hr	$i = 13.346\ t^{-0.686}$
Intensity 100 yr	1.439	in/hr	$i = 24.019\ t^{-0.7223}$
Add point flow	0	cfs	
Peak Flow 2 yr	**4.91**	**cfs**	
Peak Flow 10 yr	**8.42**	**cfs**	Q=C*I*A
Peak Flow 100 yr	**13.16**	**cfs**	

11400 South (MC Direct Discharge)

Intensity Duration Information

(South Jordan Master Plan, May 2002)

Seconds	(t) Minutes	(i) 2 year In/hr	(i) 10 year In/hr	(i) 100 year in/hr
300	5	1.992	3.504	5.256
900	15	1.192	2.144	3.556
1800	30	0.812	1.422	2.436
2700	45	0.601	1.045	1.78
3600	60	0.509	0.874	1.424
7200	120	0.325	0.55	0.845
10800	180	0.245	0.41	0.599
21600	360	0.146	0.231	0.317
43200	720	0.088	0.139	0.19
86400	1440	0.049	0.079	0.109

Rational Method Data

"C" coeff.	0.85		See Graphs
Area of Infl.	1.49	Acres	
Length (ft)	550	Feet	
Time of Conc.	12.25	Minutes	
Intensity 2yr	1.350	in/hr	$i = 7.0973\ t^{-0.6623}$
Intensity 10yr	2.393	in/hr	$i = 13.346\ t^{-0.686}$
Intensity 100 yr	3.932	in/hr	$i = 24.019\ t^{-0.7223}$
Add point flow	0	cfs	
Peak Flow 2 yr	**1.71**	**cfs**	
Peak Flow 10 yr	**3.03**	**cfs**	Q=C*I*A
Peak Flow 100 yr	**4.97**	**cfs**	

FLOW (cfs)	2yr	10yr
MCT	4.91	8.42
MC Direct Discharge	1.71	3.03

State Street

Intensity Duration Information

(South Jordan Master Plan, May 2002)

Seconds	(t) Minutes	(i) 2 year In/hr	(i) 10 year In/hr	(i) 100 year in/hr
300	5	1.992	3.504	5.256
900	15	1.192	2.144	3.556
1800	30	0.812	1.422	2.436
2700	45	0.601	1.045	1.78
3600	60	0.509	0.874	1.424
7200	120	0.325	0.55	0.845
10800	180	0.245	0.41	0.599
21600	360	0.146	0.231	0.317
43200	720	0.088	0.139	0.19
86400	1440	0.049	0.079	0.109

Rational Method Data

"C" coeff.	0.85	See Graphs
Area of Infl.	5.91 Acres	
Length (ft)	6800 Feet	
Time of Conc.	43.5 Minutes	
Intensity 2yr	0.583 in/hr	$i = 7.0973\ t^{-0.6623}$
Intensity 10yr	1.003 in/hr	$i = 13.346\ t^{-0.686}$
Intensity 100 yr	1.574 in/hr	$i = 24.019\ t^{-0.7223}$
Add point flow	0 cfs	
Peak Flow 2 yr	**2.93 cfs**	
Peak Flow 10 yr	**5.04 cfs**	Q=C*I*A
Peak Flow 100 yr	**7.91 cfs**	

Jordan Gateway

Intensity Duration Information

(South Jordan Master Plan, May 2002)

Seconds	(t) Minutes	(i) 2 year In/hr	(i) 10 year In/hr	(i) 100 year in/hr
300	5	1.992	3.504	5.256
900	15	1.192	2.144	3.556
1800	30	0.812	1.422	2.436
2700	45	0.601	1.045	1.78
3600	60	0.509	0.874	1.424
7200	120	0.325	0.55	0.845
10800	180	0.245	0.41	0.599
21600	360	0.146	0.231	0.317
43200	720	0.088	0.139	0.19
86400	1440	0.049	0.079	0.109

Rational Method Data

"C" coeff.	0.85	See Graphs
Area of Infl.	2.86 Acres	
Length (ft)	2,673.00 Feet	
Time of Conc.	22.865 Minutes	
Intensity 2yr	0.893 in/hr	$i = 7.0973\ t^{-0.6623}$
Intensity 10yr	1.559 in/hr	$i = 13.346\ t^{-0.686}$
Intensity 100 yr	2.505 in/hr	$i = 24.019\ t^{-0.7223}$
Add point flow	0 cfs	
Peak Flow 2 yr	**2.17 cfs**	
Peak Flow 10 yr	**3.78 cfs**	Q=C*I*A
Peak Flow 100 yr	**6.08 cfs**	

Lone Peak Parkway

Intensity Duration Information

(South Jordan Master Plan, May 2002)

Seconds	(t) Minutes	(i) 2 year In/hr	(i) 10 year In/hr	(i) 100 year in/hr
300	5	1.992	3.504	5.256
900	15	1.192	2.144	3.556
1800	30	0.812	1.422	2.436
2700	45	0.601	1.045	1.78
3600	60	0.509	0.874	1.424
7200	120	0.325	0.55	0.845
10800	180	0.245	0.41	0.599
21600	360	0.146	0.231	0.317
43200	720	0.088	0.139	0.19
86400	1440	0.049	0.079	0.109

Rational Method Data

"C" coeff.	0.85	See Graphs
Area of Infl.	4.62 Acres	
Length (ft)	2,626.00 Feet	
Time of Conc.	22.63 Minutes	
Intensity 2yr	0.899 in/hr	$i = 7.0973\ t^{-0.6623}$
Intensity 10yr	1.570 in/hr	$i = 13.346\ t^{-0.686}$
Intensity 100 yr	2.524 in/hr	$i = 24.019\ t^{-0.7223}$
Add point flow	0 cfs	
Peak Flow 2 yr	**3.53 cfs**	
Peak Flow 10 yr	**6.17 cfs**	Q=C*I*A
Peak Flow 100 yr	**9.92 cfs**	

11800 South Overpass

Intensity Duration Information

(South Jordan Master Plan, May 2002)

Seconds	(t) Minutes	(i) 2 year In/hr	(i) 10 year In/hr	(i) 100 year in/hr
300	5	1.992	3.504	5.256
900	15	1.192	2.144	3.556
1800	30	0.812	1.422	2.436
2700	45	0.601	1.045	1.78
3600	60	0.509	0.874	1.424
7200	120	0.325	0.55	0.845
10800	180	0.245	0.41	0.599
21600	360	0.146	0.231	0.317
43200	720	0.088	0.139	0.19
86400	1440	0.049	0.079	0.109

al Method Data

"C" coeff.	0.85	See Graphs
Area of Infl.	2.49 Acres	
Length (ft)	6,348.00 Feet	
Time of Conc.	41.24 Minutes	
Intensity 2yr	0.604 in/hr	$i = 7.0973\ t^{-0.6623}$
Intensity 10yr	1.041 in/hr	$i = 13.346\ t^{-0.686}$
Intensity 100 yr	1.636 in/hr	$i = 24.019\ t^{-0.7223}$
Add point flow	0 cfs	
Peak Flow 2 yr	**1.28 cfs**	
Peak Flow 10 yr	**2.21 cfs**	Q=C*I*A
Peak Flow 100 yr	**3.47 cfs**	

11000 South Underpass

Intensity Duration Information

(South Jordan Master Plan, May 2002)

Seconds	(t) Minutes	(i) 2 year In/hr	(i) 10 year In/hr	(i) 100 year in/hr
300	5	1.992	3.504	5.256
900	15	1.192	2.144	3.556
1800	30	0.812	1.422	2.436
2700	45	0.601	1.045	1.78
3600	60	0.509	0.874	1.424
7200	120	0.325	0.55	0.845
10800	180	0.245	0.41	0.599
21600	360	0.146	0.231	0.317
43200	720	0.088	0.139	0.19
86400	1440	0.049	0.079	0.109

Rational Method Data

"C" coeff.	0.85	See Graphs
Area of Infl.	2.79 Acres	
Length (ft)	7,241.00 Feet	
Time of Conc.	45.705 Minutes	
Intensity 2yr	0.565 in/hr	$i = 7.0973\ t^{-0.6623}$
Intensity 10yr	0.970 in/hr	$i = 13.346\ t^{-0.686}$
Intensity 100 yr	1.519 in/hr	$i = 24.019\ t^{-0.7223}$
Add point flow	0 cfs	
Peak Flow 2 yr	**1.34 cfs**	
Peak Flow 10 yr	**2.30 cfs**	Q=C*I*A
Peak Flow 100 yr	**3.60 cfs**	

11400 South

Intensity Duration Information

(South Jordan Master Plan, May 2002)

Seconds	(t) Minutes	(i) 2 year In/hr	(i) 10 year In/hr	(i) 100 year in/hr
300	5	1.992	3.504	5.256
900	15	1.192	2.144	3.556
1800	30	0.812	1.422	2.436
2700	45	0.601	1.045	1.78
3600	60	0.509	0.874	1.424
7200	120	0.325	0.55	0.845
10800	180	0.245	0.41	0.599
21600	360	0.146	0.231	0.317
43200	720	0.088	0.139	0.19
86400	1440	0.049	0.079	0.109

Rational Method Data

"C" coeff.	0.85	See Graphs
Area of Infl.	5.32 Acres	
Length (ft)	3254 Feet	
Time of Conc.	25.77 Minutes	
Intensity 2yr	0.825 in/hr	$i = 7.0973\ t^{-0.6623}$
Intensity 10yr	1.437 in/hr	$i = 13.346\ t^{-0.686}$
Intensity 100 yr	2.298 in/hr	$i = 24.019\ t^{-0.7223}$
Add point flow	0 cfs	
Peak Flow 2 yr	**3.73 cfs**	
Peak Flow 10 yr	**6.49 cfs**	Q=C*I*A
Peak Flow 100 yr	**10.38 cfs**	

I15 Interchange and Highway

Intensity Duration Information

(South Jordan Master Plan, May 2002)

Seconds	(t) Minutes	(i) 2 year In/hr	(i) 10 year In/hr	(i) 100 year in/hr
300	5	1.992	3.504	5.256
900	15	1.192	2.144	3.556
1800	30	0.812	1.422	2.436
2700	45	0.601	1.045	1.78
3600	60	0.509	0.874	1.424
7200	120	0.325	0.55	0.845
10800	180	0.245	0.41	0.599
21600	360	0.146	0.231	0.317
43200	720	0.088	0.139	0.19
86400	1440	0.049	0.079	0.109

Rational Method Data

"C" coeff.	0.85	See Graphs
Area of Infl.	5.58 Acres	
Length (ft)	5100 Feet	
Time of Conc.	35 Minutes	
[illegible] 2yr	0.674 in/hr	$i = 7.0973\ t^{-0.6623}$
[illegible] 10yr	1.164 in/hr	$i = 13.346\ t^{-0.686}$
[illegible] 100 yr	1.842 in/hr	$i = 24.019\ t^{-0.7223}$
Add point flow	0 cfs	
Peak Flow 2 yr	**3.19 cfs**	
Peak Flow 10 yr	**5.52 cfs**	Q=C*I*A
Peak Flow 100 yr	**8.73 cfs**	

	2yr	10yr
WC1a = 110, 118, 114, State	9.28	16.04
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]

DONE

State Street

Intensity Duration Information

(South Jordan Master Plan, May 2002)

Seconds	(t) Minutes	(i) 2 year In/hr	(i) 10 year In/hr	(i) 100 year in/hr
300	5	1.992	3.504	5.256
900	15	1.192	2.144	3.556
1800	30	0.812	1.422	2.436
2700	45	0.601	1.045	1.78
3600	60	0.509	0.874	1.424
7200	120	0.325	0.55	0.845
10800	180	0.245	0.41	0.599
21600	360	0.146	0.231	0.317
43200	720	0.088	0.139	0.19
86400	1440	0.049	0.079	0.109

Rational Method Data

"C" coeff.	0.85	See Graphs
Area of Infl.	7.22 Acres	
Length (ft)	7453 Feet	
Time of Conc.	46.765 Minutes	
Intensity 2yr	0.556 in/hr	$i = 7.0973\ t^{-0.6623}$
Intensity 10yr	0.955 in/hr	$i = 13.346\ t^{-0.686}$
Intensity 100 yr	1.494 in/hr	$i = 24.019\ t^{-0.7223}$
Add point flow	0 cfs	
Peak Flow 2 yr	**3.41 cfs**	
Peak Flow 10 yr	**5.86 cfs**	Q=C*I*A
Peak Flow 100 yr	**9.17 cfs**	

Lone Peak Parkway

Intensity Duration Information

(South Jordan Master Plan, May 2002)

Seconds	(t) Minutes	(i) 2 year In/hr	(i) 10 year In/hr	(i) 100 year in/hr
300	5	1.992	3.504	5.256
900	15	1.192	2.144	3.556
1800	30	0.812	1.422	2.436
2700	45	0.601	1.045	1.78
3600	60	0.509	0.874	1.424
7200	120	0.325	0.55	0.845
10800	180	0.245	0.41	0.599
21600	360	0.146	0.231	0.317
43200	720	0.088	0.139	0.19
86400	1440	0.049	0.079	0.109

Rational Method Data

"C" coeff.	0.85	See Graphs
Area of Infl.	6.40 Acres	
Length (ft)	5754 Feet	
Time of Conc.	38.27 Minutes	
Intensity 2yr	0.635 in/hr	$i = 7.0973\ t^{-0.6623}$
Intensity 10yr	1.095 in/hr	$i = 13.346\ t^{-0.686}$
Intensity 100 yr	1.727 in/hr	$i = 24.019\ t^{-0.7223}$
Add point flow	0 cfs	
Peak Flow 2 yr	**3.46 cfs**	
Peak Flow 10 yr	**5.96 cfs**	Q=C*I*A
Peak Flow 100 yr	**9.40 cfs**	

12300 South

Intensity Duration Information

(South Jordan Master Plan, May 2002)

Seconds	(t) Minutes	(i) 2 year In/hr	(i) 10 year In/hr	(i) 100 year in/hr
300	5	1.992	3.504	5.256
900	15	1.192	2.144	3.556
1800	30	0.812	1.422	2.436
2700	45	0.601	1.045	1.78
3600	60	0.509	0.874	1.424
7200	120	0.325	0.55	0.845
10800	180	0.245	0.41	0.599
21600	360	0.146	0.231	0.317
43200	720	0.088	0.139	0.19
86400	1440	0.049	0.079	0.109

Rational Method Data

"C" coeff.	0.85	See Graphs
Area of Infl.	1.59 Acres	
Length (ft)	2700 Feet	
Time of Conc.	23 Minutes	
Intensity 2yr	0.890 in/hr	$i = 7.0973\ t^{-0.6623}$
Intensity 10yr	1.553 in/hr	$i = 13.346\ t^{-0.686}$
Intensity 100 yr	2.494 in/hr	$i = 24.019\ t^{-0.7223}$
Add point flow	0 cfs	
Peak Flow 2 yr	**1.21 cfs**	
Peak Flow 10 yr	**2.10 cfs**	Q=C*I*A
Peak Flow 100 yr	**3.38 cfs**	

	2yr	10yr
WC2a = State & 123	4.62	7.96
[redacted]		
Direct Discharge		
WC2a = 123	1.21	2.10
WC2a = LonePeak	3.46	5.96

DONE

South Jordan Canal (Bangerter to Redwood Rd)

Intensity Duration Information

(South Jordan Master Plan, May 2002)

Seconds	(t) Minutes	(i) 2 year In/hr	(i) 10 year In/hr	(i) 100 year in/hr
300	5	1.992	3.504	5.256
900	15	1.192	2.144	3.556
1800	30	0.812	1.422	2.436
2700	45	0.601	1.045	1.78
3600	60	0.509	0.874	1.424
7200	120	0.325	0.55	0.845
10800	180	0.245	0.41	0.599
21600	360	0.146	0.231	0.317
43200	720	0.088	0.139	0.19
86400	1440	0.049	0.079	0.109

Rational Method Data

"C" coeff.	0.85		See Graphs
Area of Infl.	19.54	Acres	
Length (ft)	10640	Feet	
Time of Conc.	62.7	Minutes	
Intensity 2yr	0.458	in/hr	$i = 7.0973\ t^{-0.6623}$
Intensity 10yr	0.781	in/hr	$i = 13.346\ t^{-0.686}$
Intensity 100 yr	1.209	in/hr	$i = 24.019\ t^{-0.7223}$
Add point flow	0	cfs	
Peak Flow 2 yr	**7.61**	**cfs**	
Peak Flow 10 yr	**12.97**	**cfs**	Q=C*I*A
Peak Flow 100 yr	**20.08**	**cfs**	

South Jordan Canal (W end of Design to Redwood Rd)

Intensity Duration Information

(South Jordan Master Plan, May 2002)

Seconds	(t) Minutes	(i) 2 year In/hr	(i) 10 year In/hr	(i) 100 year in/hr
300	5	1.992	3.504	5.256
900	15	1.192	2.144	3.556
1800	30	0.812	1.422	2.436
2700	45	0.601	1.045	1.78
3600	60	0.509	0.874	1.424
7200	120	0.325	0.55	0.845
10800	180	0.245	0.41	0.599
21600	360	0.146	0.231	0.317
43200	720	0.088	0.139	0.19
86400	1440	0.049	0.079	0.109

Rational Method Data

"C" coeff.	0.85		See Graphs
Area of Infl.	3.35	Acres	
Length (ft)	1824	Feet	
Time of Conc.	18.62	Minutes	
Intensity 2yr	1.023	in/hr	$i = 7.0973\ t^{-0.6623}$
Intensity 10yr	1.795	in/hr	$i = 13.346\ t^{-0.686}$
Intensity 100 yr	2.906	in/hr	$i = 24.019\ t^{-0.7223}$
Add point flow	0	cfs	
Peak Flow 2 yr	**2.91**	**cfs**	
Peak Flow 10 yr	**5.11**	**cfs**	Q=C*I*A
Peak Flow 100 yr	**8.28**	**cfs**	

FLOW (cfs)	2yr	10yr
SJCa = Bang. To Rdwd	7.61	12.97

Receiving Stream:	Jordan River [@ Bluffdale Road]		9:47 AM
Stream Classification:	3B	[Aquatic Wildlife: Class 3A, 3B, 3C or 3D]	
	4	[Agriculture: 4 or N/A]	
	N/A	Direct Drinking Water Source [N/A or 1C]	
	No	An Important Fishery for Human Consumption [Yes / No]	
Stream Flow:	16.0	cfs 7Q10	
Stream Hardness:	400.0	mg/l as CaCO3	
Effluent Flow:	2.69	MGD UDOT 106th South Highway Overpass/Exchange	4.17 cfs *
Effluent Hardness:	400.0	mg/l as CaCO3	
		Acute ZID: 50.00%	
Mixed Flow:	20.17	cfs Dilution Fact. 3.84	
Mixed Hardness:	400.00	mg/l as CaCO3	400.00

Aquatic Wildlife Criteria (Class 3 Waters)

Based upon a Hardness of: 400 mg/l as CaCO3.

	Criteria ug/l		Upstream Allowable Effluent Concentration ug/l		ug/l	ug/l	ug/l
PARAMETER	**4-Day**		**1-Hour**	Upstream Conc. ug/l	**4-Day [Chronic]** Permit Limits Determined against Chronic Standards, May Equal Standard	**1-Hour [Acute]** Acute Limit Based Upon 50% ZID	**1-Hour [Acute]** Controlling Acute Limit, Equals Chronic where Acute < Chronic
METALS, ug/L	**Chronic**	**3.18x MDL**	**Acute**				
Aluminum	87.00	9.5	750.0	9.54	384.45	2,171.7	2,171.7
Arsenic	150.00	3.2	360.0	3.18	713.79	1,045.1	1,045.1
Cadmium	0.76	0.3	8.7	0.32	2.44	24.9	24.9
Chromium III	268.22	3.2	5611.7	3.18	1,285.97	16,380.0	16,380.0
ChromiumVI	11.00	15.9	16.0	15.90 #	11.00	16.2	16.2
Copper	30.50	3.18	51.7	6.00	124.58	139.4	139.4
Iron			1000.0	0.00		2,920.0	2,920.0
Lead	18.58	3.18	476.8	1.50	84.17	1,389.4	1,389.4
Mercury	0.01	0.6	2.4	0.64 #	0.01	5.8	5.8
Nickel	168.54	3.2	1515.9	3.18	803.52	4,420.4	4,420.4
Selenium	4.60	6.4	20.0	6.36 #	4.60	46.2	46.2
Silver	N/A	0.6	41.1	0.64	N/A	118.7	118.7
Zinc	387.83	0.3	387.8	15.00	1,819.49	1,103.7	1,819.5
				Rule (See Note):			

* Assumes 50 cfs for 2-hour period, which equals 2.69 MGD

Receiving Stream: Willow Creek **9:44 AM**

Stream Classification:
- 3B [Aquatic Wildlife: Class 3A, 3B, 3C or 3D]
- 4 [Agriculture: 4 or N/A]
- N/A Direct Drinking Water Source [N/A or 1C]
- No An Important Fishery for Human Consumption [Yes / No]

Stream Flow: 3.0 cfs 7Q10

Stream Hardness: 400.0 mg/l as CaCO3

Effluent Flow: 1.29 MGD UDOT 106th South Highway Overpass/Exchange 2.00 cfs *

Effluent Hardness: 400.0 mg/l as CaCO3

Acute ZID: 50.00%

Mixed Flow: 5.00 cfs Dilution Fact. 1.50

Mixed Hardness: 400.00 mg/l as CaCO3 400.00

Aquatic Wildlife Criteria (Class 3 Waters)

Based upon a Hardness of: 400 mg/l as CaCO3.

	Criteria ug/l		Upstream Allowable Effluent Concentration ug/l		ug/l	ug/l	ug/l
PARAMETER	4-Day	1-Hour	Upstream Conc. ug/l		4-Day [Chronic] Permit Limits Determined against Chronic Standards, May Equal Standard	1-Hour [Acute] Acute Limit Based Upon 50% ZID	1-Hour [Acute] Controlling Acute Limit, Equals Chronic where Acute < Chronic
METALS, ug/L	**Chronic**	**3.18x MDL**	**Acute**				
Aluminum	87.00	9.5	750.0	9.54	203.19	1,305.3	1,305.3
Arsenic	150.00	3.2	360.0	3.18	370.23	627.6	627.6
Cadmium	0.76	0.3	8.7	0.32	1.41	15.0	15.0
Chromium III	268.22	3.2	5611.7	3.18	665.78	9,818.0	9,818.0
ChromiumVI	11.00	15.9	16.0	15.90 #	3.65	16.1	16.1
Copper	30.50	3.18	51.7	6.00	67.25	85.9	85.9
Iron			1000.0	0.00		1,750.0	1,750.0
Lead	18.58	3.18	476.8	1.50	44.20	833.3	833.3
Mercury	0.01	0.6	2.4	0.64 #	0.01	3.7	3.7
Nickel	168.54	3.2	1515.9	3.18	416.58	2,650.5	2,650.5
Selenium	4.60	6.4	20.0	6.36 #	1.96	30.2	30.2
Silver	N/A	0.6	41.1	0.64	N/A	71.4	71.4
Zinc	387.83	0.3	387.8	15.00	947.07	667.5	947.1

Rule (See Note):

* Assumes 24 cfs for 2-hour period, which equals 1.29 MGD.

Receiving Stream: Midas Creek **9:46 AM**

Stream Classification:
- 3B [Aquatic Wildlife: Class 3A, 3B, 3C or 3D]
- 4 [Agriculture: 4 or N/A]
- N/A Direct Drinking Water Source [N/A or 1C]
- No An Important Fishery for Human Consumption [Yes / No]

Stream Flow: 1.0 cfs 7Q10

Stream Hardness: 400.0 mg/l as CaCO3

Effluent Flow: 0.45 MGD UDOT 106th South Highway Overpass/Exchange 0.70 cfs *

Effluent Hardness: 400.0 mg/l as CaCO3

Acute ZID: 50.00%

Mixed Flow: 1.70 cfs Dilution Fact. 1.43

Mixed Hardness: 400.00 mg/l as CaCO3 400.00

Aquatic Wildlife Criteria (Class 3 Waters)

Based upon a Hardness of: 400 mg/l as CaCO3.

	Criteria ug/l		Upstream Allowable Effluent Concentration ug/l		ug/l	ug/l	ug/l
PARAMETER	**4-Day**	**1-Hour**	Upstream Conc. ug/l		**4-Day [Chronic]** Permit Limits Determined against Chronic Standards, May Equal Standard	**1-Hour [Acute]** Acute Limit Based Upon 50% ZID	**1-Hour [Acute]** Controlling Acute Limit, Equals Chronic where Acute < Chronic
METALS, ug/L	**Chronic**	**3.18x MDL**	**Acute**				
Aluminum	87.00	9.5	750.0	9.54	197.39	1,277.6	1,277.6
Arsenic	150.00	3.2	360.0	3.18	359.24	614.3	614.3
Cadmium	0.76	0.3	8.7	0.32	1.38	14.7	14.7
Chromium III	268.22	3.2	5611.7	3.18	645.95	9,608.2	9,608.2
ChromiumVI	11.00	15.9	16.0	15.90 #	4.02	16.1	16.1
Copper	30.50	3.18	51.7	6.00	65.42	84.2	84.2
Iron			1000.0	0.00		1,712.6	1,712.6
Lead	18.58	3.18	476.8	1.50	42.92	815.5	815.5
Mercury	0.01	0.6	2.4	0.64 #	0.01	3.7	3.7
Nickel	168.54	3.2	1515.9	3.18	404.21	2,593.9	2,593.9
Selenium	4.60	6.4	20.0	6.36 #	2.09	29.7	29.7
Silver	N/A	0.6	41.1	0.64	N/A	69.9	69.9
Zinc	387.83	0.3	387.8	15.00	919.18	653.5	919.2

Rule (See Note):

* Assumes 8.4 cfs for 2-hour period, which equals 0.45 MGD

N

10400 South (South Jordan Parkway)

South Jordan

11400 South

11800 South

12600 South

Riverton

Bangerter Highway

Redwood Road

1300 West

700 West

River Front Parkway

Gateway

State Street

Lone Peak Parkway

10600 South

Sandy

11400 South

11800 South

12300 South

Draper

White City

1000 East

Jordan River

Dry Creek

Galena Canal

Beckstead Ditch

Jordan and Salt Lake Canal

Utah and Salt Lake Canal

Utah Lake Distribution Canal

South Jordan Canal

Midas Creek

Butterfield Creek

Willow Creek

Little Butterfield Creek

East Jordan Canal

Mudlock Ditch

15

Not to scale

Existing Drainage Line
Proposed Drainage Line
Perennial Streams and Canals
Intermittent Streams and Canals
Flow Direction
Existing/Expanding Drainage Basin
Proposed Drainage Basin
Outfall
City Boundary

Appendix I-1.
Proposed and Existing Drainage
11400 South Project Area

11400 SOUTH
Environmental Impact Statement